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# Economics of MILK MARKETING in ALASKA

UNITED STATES DEPARTMENT OF AGRICULTURE  
Economic Research Service Marketing Economics Division  
Marketing Research Report No. 675

## PREFACE

This study was done under a cooperative agreement between the Marketing Economics Division, Economic Research Service, and the Alaska Agricultural Experiment Station. It was initiated at the request of Dr. Allan H. Mick, Director, Alaska Agricultural Experiment Station. It brings up to date the report "Marketing Milk in Alaska," Marketing Research Report No. 385, March 1960.

The data were collected during the summer of 1963 by personal interviews with people in business firms and others involved in processing, transporting, and selling dairy products. Without the cooperation of these people, this study would not have been possible.



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## HIGHLIGHTS

Although Alaska has a land area of about one-fifth that of the "lower 48 States," the consumption of dairy products is limited by a relatively small population, limited income, high consumer prices, and many somewhat isolated markets. Alaska has the potential, however, for a higher per capita consumption. The 1960 Population Census showed that the median age of Alaskans is 26.6 percent lower than that for the United States.

Alaska has never produced enough milk to meet its needs. However, milk production has risen considerably in recent years--about 126 percent in the last 10 years. The high cost of producing milk in the State makes it economically feasible to obtain milk and milk products from wholesalers in the Seattle, Wash., and Portland, Oreg., areas.

Procurement practices used by retail grocers to obtain dairy products in April 1963 varied among the 11 markets surveyed. Practices varied largely because of differences in market size, location, topography, transportation facilities, and the availability of local milk. All 11 markets received some dairy products from the Seattle area, but not all markets received the same kind of products. All markets obtained manufactured products, particularly evaporated milk and nonfat dry milk; six markets, fresh concentrated milk; six, fluid milk; nine, cottage cheese; and a few markets obtained yogurt, sour cream, whipping cream, and other products. Grocers in nine markets sold Alaskan-processed products. Milk was processed locally in six markets; however, processors in two of the markets did not sell to local retailers.

Fresh homogenized milk was sold in various sizes and kinds of containers. Most milk, except in one market, was sold in half-gallon containers. Paper cartons were used exclusively in retail stores; however, both paper and glass containers were used in home deliveries in some markets. Some processors sold milk in half-pints and some in bulk containers.

Sales for the 11 markets totaled 762,897 quarts of bottled milk products and 743,768 quart-equivalents of canned liquid and dry milks. Sales of cream and related products and cottage cheese were relatively minor. Only in Anchorage, Fairbanks, and Juneau were sales of bottled milk higher than those of canned liquid and dry milks. Locally produced milk accounted for about 76 percent of all bottled milk products (excluding recombined milks) for Anchorage; 65 percent for Juneau; and 52 percent for Fairbanks.

Consumer prices for the three major dairy products--homogenized milk, evaporated milk, and nonfat dry milk--varied considerably among markets. Retail prices for these products were highest in Nome and lowest in Juneau. Comparative prices in the two markets indicate that retail prices in Nome were 109 percent higher for homogenized milk; 32 percent higher for evaporated milk; and 42 percent higher for nonfat dry milk. Most differences in consumer prices among markets were due to differences in retail markups and in transportation costs.

Trade competition among Alaskan markets is limited. Smallness of markets, lack of adequate intermarket transportation, dependency on outside supplies, distance, and topography are some of the factors that tend to restrict this trade. Almost all trade that exists is between Anchorage and outlying markets.

Competition appeared to be sufficient among grocers in the larger markets but limited in many of the smaller ones. The size of the market limits the number of grocers in many of them. Market entry appeared to be unrestricted--main barriers being high cost and small markets. Some grocers competed by product differentiation and weekend price specials.

Grocers apparently determine their selling prices for dairy products produced outside the State on the basis of their purchase price, transportation cost, and a percentage



markup to cover store cost and provide a profit. Grocers paid slightly more for outside milk in most markets than for local milk. Only in Juneau, did outside milk cost less than local milk.

Many Alaskans substitute concentrated milk, nonfat dry milk, evaporated milk, and other milk products for fresh milk. These products are readily available, easily stored, and cheaper than fresh milk. Some people also prefer them for their taste. Most Alaskans, however, use substitutes, primarily, because they are much cheaper than fresh milk.

Differences in prices for fresh milk and milk substitutes varied widely among the 11 markets surveyed. Between fresh milk and nonfat dry milk (fluid equivalent), price differences ranged from 24.3 to 56.6 cents per quart; for evaporated milk, from 13.3 to 43.0 cents; and for concentrated milk, from 6.6 to 14.3 cents.

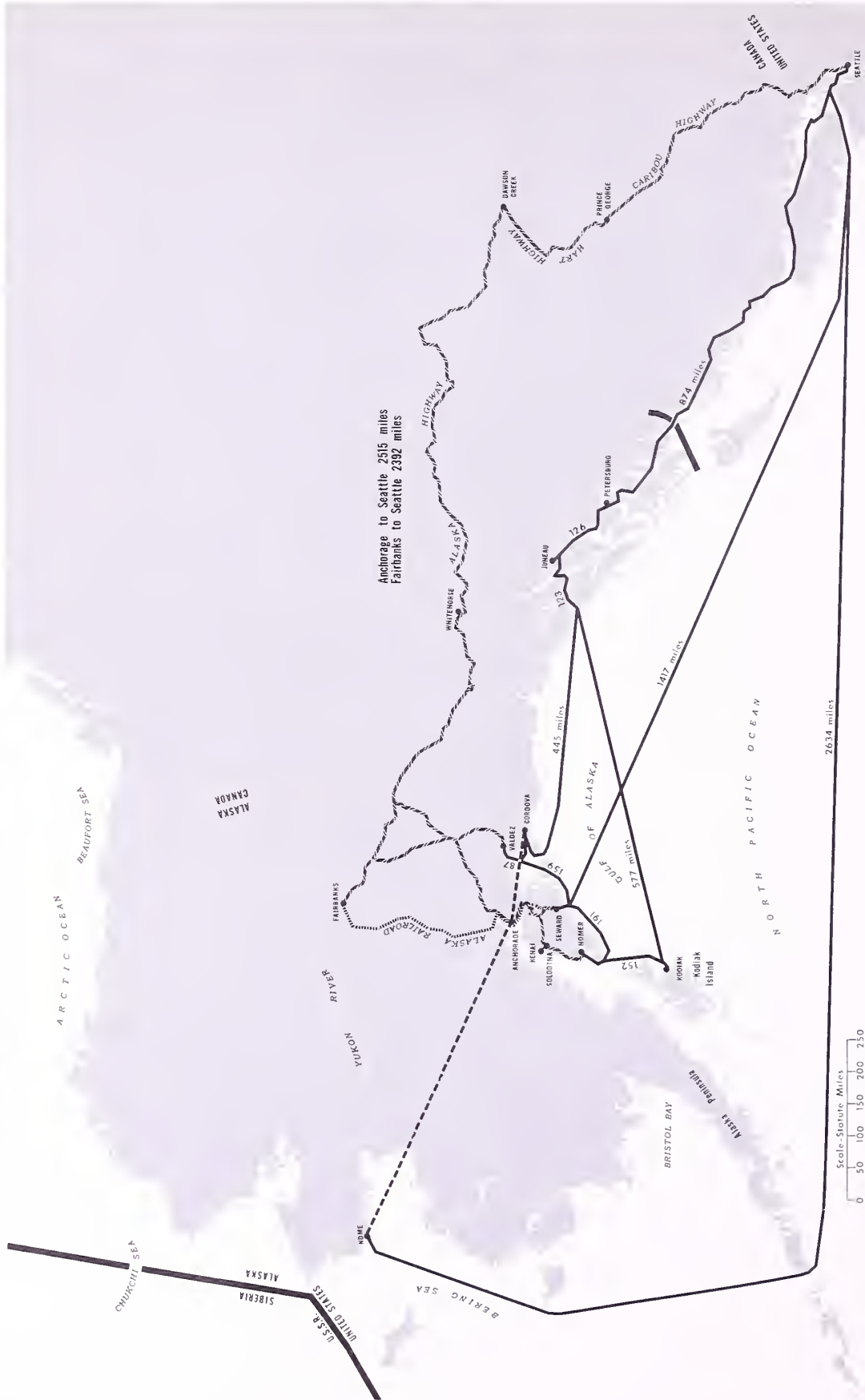
In April 1963, the Department of Defense in Alaska used approximately the following amounts of dairy products: Homogenized milk, 427,324 quarts; other bottled milk products, 542,940 quarts; and canned liquid and dry milk, 86,195 quart-equivalents. The Department also used smaller quantities of cream and related products and cottage cheese. All the concentrated milk and manufactured products were requisitioned from the Seattle Defense Subsistence Supply Center. However, most of the homogenized milk and other fresh dairy products came from local processors.

A comparison of data for four markets--Anchorage, Fairbanks, Juneau, and Kodiak--covered in both this and a previous report, "Marketing Milk in Alaska," Marketing Research Report 385 shows that the following changes have occurred in milk marketing since 1957:

1. Sales of homogenized milk declined 13.8 percent, although sales of all bottled milk products--homogenized milk, recombined milks, concentrated milk, and so forth--increased 18.3 percent. Total sales of all bottled milk products excluding homogenized milk, increased 307.1 percent.
2. Total sales of canned liquid and dry milks increased 30.0 percent. Sales of evaporated milk, whole milk, and dry whole milk declined 28.2 percent; however, sales of nonfat dry milk and dry buttermilk rose 181.7 percent.
3. Consumer prices for dairy products varied: Homogenized milk prices were higher in three of the four markets; evaporated milk prices were higher in two markets; and canned whole milk and nonfat dry milk prices were lower in all four markets.
4. In 1957, no bulk milk produced outside the State was shipped into any of the four markets; in April 1963, however, considerable quantities were shipped into Anchorage at a cost about 10 percent less than local milk.
5. Differentials in retail prices between homogenized milk and its chief substitutes--concentrated milk, nonfat dry milk, and evaporated milk--have increased since 1957. Also, new, lower-priced substitute products have entered the Anchorage and Fairbanks markets.

The big change in the military market has been the switch from feeding military personnel recombined milk to fresh milk only. In 1963, the military used a large part of the milk sold by the two processors in the Anchorage area. Total military consumption of bottled milk products has increased 3.7 percent since 1957, although the number of military personnel dropped about 25 percent. The increase in sales, apparently, has come from purchases by dependents in military commissaries.

# DAIRY PRODUCTS: SHIPPING ROUTES TO 11 ALASKAN MARKETS



# ECONOMICS OF MILK MARKETING IN ALASKA

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## INTRODUCTION

Alaska affords a good opportunity to study what happens when consumers are confronted continually with high-priced fresh milk and relatively low-priced substitutes. Also, there is an opportunity to study the effects of transporting lower cost milk hundreds of miles to compete with high-cost, locally produced milk.

The variety and quality of dairy products available to Alaskans have improved in recent years. These changes have resulted from an expanding economy, wider distribution of fresh milk, and improvements in refrigeration and transportation.

Dairying is the leading agricultural pursuit in Alaska. The volume of milk sold by farmers rose about 48 percent from 1957 to 1962. Income from milk constitutes more than half of total farm income. Despite this dominant position of milk in Alaskan agriculture, not enough milk is produced to satisfy the needs of the population. This is largely because of the high cost of producing, processing, and distributing local milk and milk products. It is more economical to obtain supplies of manufactured milk products--butter, nonfat dry milk, evaporated milk, and so forth--from the "lower 48 States." Most of these products come from the Seattle area. It is also more economical in many markets to obtain fresh milk, particularly by bulk tank, from Seattle or from other markets in Washington and Oregon.

The cost of transporting dairy products from Seattle to markets in Alaska is relatively high. Probably in no other State does transportation cost constitute such a large part of what the consumer pays for dairy products. Major factors contributing to these costs are: Great distances between markets; separation from the lower 48 States by Canada; rough topography; and lack of backhaul revenues by freight carriers.

Steamships, barges, trucks, and, to some extent, airplanes are used to move fresh milk and other dairy products from Seattle to Alaska. The Alaskan Steamship Company, Alaska Freight Lines, and Puget Sound--Alaskan Van Lines are the most important water carriers. The first operates ships; the other two operate barges. The Alaska Steamship Company serves most of the State; it is the only carrier serving southeast Alaska, Kodiak, southwest Alaska, and western Alaska. Its ships go as far north as Kotzebue. The Alaska Freight Lines and Puget Sound-Alaska Van Lines serve Seward, Whittier, and Anchorage. The Alaska Freight Lines offers year-round service to Anchorage via Cook Inlet.

Direct service from Seattle is offered markets on the Yukon River by the Alaska Steamship Line to Seward, the Alaska Railroad to Nenana, and the Yutana Barge Line on the Tanana River.

Most dairy products moving over the Alaskan Highway go to Fairbanks and Anchorage. The Lynden Freight Lines does most of this hauling. The trucks, which are refrigerated, usually carry only the most perishable products--whole milk, concentrated milk, cottage cheese, sour cream, and yogurt.

## PURPOSE OF REPORT

The purpose of the report is to add to the limited amount of published information available on the economics of marketing dairy products in Alaska. The main objectives are to:

- (1) Describe and analyze the source, volume, costs, and selling prices of milk marketed in Alaska.
- (2) Analyze and evaluate the comparative costs and advantages of marketing fresh, reconstituted, and concentrated milk.
- (3) Analyze the characteristics of demand for milk in Alaska as they affect requirements for supplies and costs of distribution.
- (4) Analyze factors affecting costs and pricing of locally produced milk.
- (5) Analyze changes in marketing since 1957.

## SCOPE AND METHODOLOGY

The availability of milk produced within and outside the State was the main criterion used to select most of the markets included in this study. In addition, a few somewhat isolated markets were included to study their potentials as future market outlets for fresh milk. The 11 markets selected were Anchorage, Cordova, Fairbanks, Homer, Juneau, Kodiak, Nome, Petersburg, Seward, Soldotna-Kenai, and Valdez.

Market as used in this report is the city and the surrounding area which it serves. For example, the Anchorage market includes Anchorage, Spenard, a suburb, and Palmer, a city that is 48 miles from Anchorage.

Data for April 1963 were obtained from milk processors, food wholesalers, food retailers, food brokers, and military agencies. There were 68 marketing firms interviewed. Most of these--over two-thirds--were retail grocers (table 1). Additional data on movement of milk from Seattle to Alaska were obtained from the Seattle Defense Subsistence Supply Center and the Seattle Administrator of Federal Milk Order No. 125.

Market coverage of firms selling dairy products varied. All food retailers were contacted in most of the smaller markets. In each of the other markets, the largest food retailers--those selling 80 percent or more of the dairy products in the market--were contacted. The percentages were based on estimates given by persons in the trade.

Data were collected for fresh milk and for about 20 other dairy products which are used, to some degree, by Alaskans as substitutes for fresh milk. No data were obtained for cheese (except cottage cheese), frozen desserts, and butter.

## CONSUMERS OF DAIRY PRODUCTS IN ALASKA

Population and income are two important factors affecting the consumption of dairy products. For Alaska, another important factor--availability--should be added, especially



for the more perishable products. Inadequate transportation and refrigeration keep these products out of many isolated villages.

## Population

Although Alaska has the largest land area of any State, the consumption of dairy products is limited because it has the smallest population. The U. S. Bureau of the Census reported that only 226,167 people were living in the State as of April 1960 (table 2). Later data by the Census showed that the total population had risen to 248,000 as of July 1, 1963.<sup>1</sup>

In 1960, Alaska had a population of only 38.6 persons per 100 square miles. The greatest concentrations of population were in the areas of Anchorage (south-central region), Fairbanks (interior region), Juneau (southeast region), and Ketchikan (southeast region). The south-central region contained 48 percent of the State's population, although it has only about 14 percent of the total land area. The combined population of the southwest and northwest regions was only 31 percent that of the south-central region, although the combined areas were 232 percent greater.

Normally, children consume more milk than adults. It is important for their physical growth. In 1960, the median age in Alaska was only 23.3 years--6.2 years younger than the average age of all persons in the United States. This indicates that, at least on basis of age, Alaskans have the potential for greater milk consumption. The median age varied considerably among the different areas. It was only 19 years in the northwest--7 years less than in the southeast.

A breakdown of the 1960 population in Alaska shows that most persons--about 59 percent--were between the ages of 18 and 64. Most of the others--almost 39 percent--were less than 18 years old. About 2 percent were over 64.

The largest percentage of persons under 18 were in the northwest region. In 1960, they accounted for almost half--48 percent--of the population of the region.

## Income

Consumer income affects the consumption of dairy products. The 1960 Census of Population reports two different measures of consumer income--median family income and mean income for persons 14 years and older (table 3). For 1959, median family income for Alaska was \$7,305 and mean income for persons 14 years and older, \$4,328.

Both median family income and mean income for persons 14 years and over vary widely among the different regions. Incomes are higher in the more highly populated regions--southeast, south-central, and interior. The other regions--southwest and northwest--are more thinly populated and incomes are much lower.

A wide gap existed in 1959 between the median family income for white and nonwhite families. Median family income for white families was \$8,060--118 percent higher than for nonwhite families. This income differential was widest in the interior, southeast, and south-central, and narrowest in the southwest and northwest.

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<sup>1</sup> U. S. Bureau of Census. Current Population Reports, Series P-25, No. 273, Oct. 4, 1963.

Table 1.--Number of marketing firms surveyed in Alaska, by market, April 1963

Market	Retail : grocers	Wholesale : grocers or food brokers	Fresh milk : processors	Fresh milk : distributors	Military	Total
Anchorage.....	14	3	2	---	2	21
Cordova.....	3	---	---	---	---	3
Fairbanks.....	5	2	1	2	2	12
Homer.....	4	---	---	---	---	4
Juneau.....	3	1	1	---	---	5
Kodiak.....	3	---	<u>1/</u>	---	1	4
Nome.....	2	---	---	---	---	2
Petersburg.....	3	---	1	---	---	4
Seward.....	4	---	---	1	---	5
Soldotna-Kenai..	4	---	1	1	---	6
Valdez.....	2	---	---	---	---	2
Total.....	47	6	6	4	5	68

1/ The one processor, a producer-distributor, in the Kodiak market was not interviewed.

Table 2.--Selected data related to the demand for dairy products in Alaska, by region, 1960 1/

Region	Population:	Population : per 100 square miles	Population: per household	Age of population Median : age	Under : 18	18 to : 64	64 and over
	<u>Persons</u>	<u>Persons</u>	<u>Persons</u>	<u>Years</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>
Southeast.....	35,403	94.2	3.22	26.0	39.9	54.7	5.4
South central..	108,851	129.1	3.39	24.0	38.5	59.9	1.6
Southwest.....	21,001	13.7	4.63	19.6	37.2	60.8	2.0
Interior.....	49,128	26.6	3.35	23.3	36.5	61.8	1.7
Northwest.....	11,784	9.3	5.05	19.0	48.2	48.3	3.5
State.....	226,167	38.6	3.49	23.3	38.7	59.0	2.3

1/ U.S. Bureau of Census. 1960 Census of Population, Characteristics of the Population, Vol. 1, Part 3, Alaska. 1962.



Table 3.--Selected data on income in regions and specified cities  
in Alaska, 1959

Region, city, and State	Median income		Mean income <u>1/</u>
	All families	Nonwhite families	
	<u>Dollars</u>	<u>Dollars</u>	<u>Dollars</u>
Southeast.....	8,269	5,417	4,384
Juneau.....	9,254	---	---
Ketchikan.....	8,199	---	---
Sitka.....	9,010	---	---
South central.....	7,810	5,399	4,740
Anchorage.....	8,272	---	---
Kodiak.....	6,567	---	---
Spenard.....	9,424	---	---
Southwest.....	3,603	2,274	2,896
Interior.....	7,248	4,212	4,189
Fairbanks.....	7,984	---	---
Northwest.....	3,169	2,416	2,967
State.....	7,305	3,339	4,328

1/ Mean income of persons 14 years and older.

Source: U.S. Bureau of the Census. 1960 Census of Population, Vol. 1, Part 3. Characteristics of the Population, Alaska. Govt. Print. Off., Wash., 1963.

## THE SUPPLY OF DAIRY PRODUCTS IN ALASKA

### Local Milk Production

Milk production in Alaska has more than doubled in the last 10 years (table 4). Production rose in each year except 1962. The biggest jump in production occurred in 1960 when local milk processors obtained Department of Defense contracts to supply the military bases at Anchorage and Fairbanks with local fresh milk rather than recombined milk. The decline in production in 1962 can be attributed to (1) tightened sanitation and health requirements on most farms, (2) intensive cow culling, and (3) increased competition from outside milk.<sup>2</sup>

Milk production is largely concentrated in the south-central region in the Matanuska Valley. Of the total milk produced in the State, 82 percent is produced in this region and practically all of this amount (80 percent) in the Matanuska Valley. Closeness to Anchorage--the major market in the State; relatively favorable land and climate for dairying; relatively good roads for transporting milk; and government encouragement and assistance in farm development have all contributed to the development of Matanuska Valley as a dairy area.

Relatively minor quantities of milk are produced in the interior and southeast. There is little, if any, dairying in the other parts of the State.

<sup>2</sup> Alaska Cooperative Crop Reporting Service. 1962 Alaska Farm Production. Palmer, May 1963.

Table 4.--Number of milk cows on farms in Alaska, pounds of milk produced, percentage of milk sold, and average prices received, by regions, 1953-1962

Milk cows on farm

Region and State	1962	1961	1960	1959	1958	1957	1956	1955	1954	1953
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
South central.....	2,320	2,530	2,180	1,720	1,661	1,678	1,684	1,460	1,135	966
Interior.....	320	410	340	245	195	166	141	129	110	107
Southeast.....	210	210	210	203	201	210	201	225	290	305
Southwest & west.....	50	50	40	33	38	43	37	22	33	20
State.....	2,900	3,200	2,770	2,201	2,095	2,097	2,063	1,836	1,568	1,398
Total milk produced										
	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds	pounds
South central.....	18,860	19,170	16,043	13,645	13,126	12,784	12,384	10,028	9,065	7,216
Interior.....	2,550	2,700	2,265	1,716	1,542	1,320	1,026	805	748	643
Southeast.....	1,440	1,540	1,586	1,342	1,274	1,237	1,218	1,573	1,794	2,170
Southwest & west.....	150	160	184	153	194	133	128	242	209	138
State.....	23,000	23,570	20,078	16,856	16,136	15,474	14,756	12,648	11,816	10,167
Percentage of milk sold										
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
South central.....	96	95	96	94	95	96	95	95	93	92
Interior.....	95	93	93	93	92	95	96	94	94	97
Southeast.....	94	95	93	97	97	95	95	96	98	98
Southwest & west.....	20	31	50	16	13	83	86	48	84	98
State.....	96	94	95	94	94	96	95	94	94	94
Average price received per cwt.										
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
South central.....	10.24	10.59	10.89	11.28	10.50	10.81	10.82	11.08	11.06	10.84
Interior.....	11.28	11.08	10.93	11.00	10.74	11.43	10.98	11.07	10.71	11.04
Southeast.....	10.15	8.01	10.63	10.90	10.86	11.14	9.50	8.72	9.98	9.97
Southwest & west.....	10.00	8.00	11.85	7.00	12.00	11.82	11.82	11.97	12.00	11.85
State.....	10.35	10.47	10.88	11.21	10.56	10.90	10.73	10.79	10.88	10.67

Compiled as follows:

Gazaway, H. P., Facts and Observations on Agricultural Development in Alaska. Alaska Division of Lands, Department of Natural Resources. July 1960 (revised Dec. 1960).  
 Alaska Agricultural Experiment Station. Alaska Farm Facts. Alaska Agr. Expt. Sta. Bul. 27. Feb. 1961.  
 Alaska Cooperative Crop Reporting Service. Alaska Farm Production. Palmer, Alaska. 1953-62.

Returns to farmers from milk sales have averaged between \$10 and \$12 per hundredweight during the last 10 years.<sup>3</sup> These prices were necessary because of high production costs. In a study on dairying in Matanuska Valley, Saunders found that the cost of producing milk by 15 farmers in 1961 averaged \$9.62 per hundredweight.<sup>4</sup> Average price received for this milk was only \$10.66--leaving \$1.04 net return to labor and management. Purchased feeds, seeds, fertilizers, and hired labor contributed most to high production costs. In 1961, they constituted 48 percent of the total costs.

Farmers pay high prices for feed, seeds, and fertilizers because they have to be brought in from the "lower 48" States. Hired labor costs are high because of high prevailing wages in alternative job opportunities.

### Supply of Outside Dairy Products

Since 1949, the amount of milk sold by dairy farmers in Alaska has increased about two and a half times as fast as population. But even today not enough milk is produced to equal total consumption (at least not at the present level of retail prices). This rapid rise in production has narrowed the wide gap which had existed between supply and total consumption.

Historically, Seattle wholesalers (together with local sources in some markets) have supplied markets in Alaska with dairy products. In addition, at the time of this study, bulk milk was being shipped to a milk processing plant in Anchorage from Portland, Oreg. In past years, small amounts of milk have come into the State from Minnesota and Canada.

In April 1963, Seattle wholesalers shipped substantial quantities of a wide variety of fresh dairy products to various markets throughout the State (table 5).<sup>5</sup> The largest quantities were shipped to markets in the south-central region--mainly to Anchorage. Considerable quantities were also shipped to markets in the southeast and interior, particularly to Fairbanks. Concentrated milk, homogenized milk, and cottage cheese moved in greatest volume. The Department of Defense bought the largest quantity of concentrated milk, slightly over three-fourths of the total supply. The south-central (mainly Anchorage) and the interior (mainly Fairbanks) regions were big markets for concentrated milk. Anchorage and markets in the southeast used the largest quantities of outside homogenized milk. Most milk shipped to Anchorage was in bulk tanks, whereas, all milk shipped to the southeastern markets was in consumer-sized packages. The south-central, southeast, and interior regions were also good markets for cottage cheese processed outside the State.

## ECONOMICS OF MARKETING DAIRY PRODUCTS IN 11 ALASKAN MARKETS

### Market Population

Population data for the various markets are based on 1960 Census data and estimates given by merchants and other knowledgeable persons in each market. Sources of current estimates varied among the markets, depending on availability.

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<sup>3</sup> These figures do not include any patronage refunds paid to members of farmers' cooperatives.

<sup>4</sup> Saunders, A. Dale. Cost and Returns on Matanuska Valley Dairy Farms. Alaska Agricultural Experiment Station, Palmer, Jan. 1963.

<sup>5</sup> Complete data were not available on the total quantities of butter, evaporated milk, dried milks, and other manufactured products shipped into the State during this month.

The 11 markets surveyed, including military personnel and their dependents, comprised almost 78 percent of the total population of the State (table 6). The estimated number of civilians surveyed was 124,300--slightly over 69 percent of the civilian population. The military segment totaled 69,000, or almost 28 percent of the total population.

Anchorage, Fairbanks, and Juneau were the largest markets surveyed. The civilian population of Anchorage alone accounts for over a fourth of the population of the State and the total population of the three markets amounts to over two-fifths. Among the individual markets, populations ranged from 900 for Valdez to 66,500 for Anchorage.

### Location of Markets

Many of the markets surveyed are widely scattered throughout the State (map). Seven markets are located in the south-central region--Anchorage, Seward, Soldotna-Kenai, Homer, Kodiak, Valdez, and Cordova. Two markets--Juneau and Petersburg--are located in the southeast, one market--Fairbanks--in the interior region, and one market--Nome--in the northwest region.

Accessibility to many of the markets is limited. Five markets--Petersburg, Juneau, Cordova, Kodiak, and Nome--are accessible by water and air only; Nome is accessible by water only from the latter part of May through September. Five other markets--Valdez, Seward, Homer, Soldotna-Kenai, and Anchorage--are reached by land, water, and air. Fairbanks is accessible by land and air only.

Anchorage is 1,450 air miles from Seattle, combined water and rail distance is 1,548 miles, and highway distance via the Alaska Highway is 2,515 miles. It is the largest and probably the fastest growing city in the State. Anchorage's economy is based largely on military and other types of government spending. Two large military bases are located nearby. It is also the major trade, transportation, communication, and supply center in the State.

Cordova, situated on the shores of Prince William Sound, is 175 air miles southeast of Anchorage. It is 1,416 air miles and 1,445 steamship miles from Seattle. Principal employments are fishing and canneries, government, and lumbering. About half of the total year-round employment is furnished by the local, State, and Federal Governments.

Fairbanks, the second largest city in the State, is north of the Alaska Range, 445 highway miles and 270 air miles north of Anchorage. It is the northern terminus of both the 470-mile-long Alaska Railroad and the Alaska Highway. It is 2,392 highway miles and 1,665 air miles from Seattle. Fairbanks serves as a focal supply, transportation, and communication center for northern Alaska, although its economy is based mostly on the two adjacent military installations.

Homer, at the southern end of Kenai Peninsula on Kachemak Bay, is 146 air and 225 highway miles southwest of Anchorage. Homer's economy is based largely on the fishing industry and government.

Juneau, the State's Capitol, is located in the Southeastern Panhandle 634 air miles southeast of Anchorage. It is 940 air and 1,000 steamship miles from Seattle. Juneau is the headquarters for most of the Federal and State agencies. Other than Government, fishing is the most important industry.

Kodiak, located on Kodiak Island, is 282 air miles southwest of Anchorage. From Seattle to Kodiak, it is 1,700 miles by steamship and 1,453 by air. The economy of Kodiak is based on governmental activities--mostly the Naval Air Base nearby--and the fishing industry.



Table 5.--Amounts of each kind of fresh dairy product shipped from Seattle to the Department of Defense in Alaska and to the various regions, April 1963 1/

Product	: Dept. of : : Defense :	: Southeast:	: South central:	: Southwest:	: Interior:	: Alaska : total
	: : <u>Quarts</u>	: <u>Quarts</u>	: <u>Quarts</u>	: <u>Quarts</u>	: <u>Quarts</u>	: <u>Quarts</u>
Homogenized milk.....	1,720	124,502	207,429	80	9,377	343,108
Concentrated milk <u>2/</u> ...	461,668	12,088	70,252	150	55,978	600,136
Skim milk.....	---	1,746	396	---	204	2,346
Buttermilk.....	1,348	3,584	4,028	80	2,425	11,465
Chocolate drink.....	---	2,364	305	---	200	2,869
Half-&-half.....	---	1,300	437	---	325	2,062
Commercial cream.....	---	205	7,152	75	---	7,432
Whipping cream.....	---	588	593	---	270	1,451
Sour cream.....	240	754	921	60	465	2,440
Yogurt.....	---	111	385	---	421	917
Cottage cheese.....	1,918	6,456	7,100	294	4,068	19,836

1/ Most data obtained from the market administrator, Federal Order No. 125, Seattle, Wash. These figures include total amounts shipped into the State except for minor amounts of commercial cream, whipping cream, and cottage cheese which were obtained from subdealers in Seattle. Data obtained from the market administrator showed that 3,848 dozen novelties, 6,445 gallons of ice cream, and 1,299 gallons of ice cream mix were shipped into the State.

2/ Whole milk equivalent.

Table 6.--Estimated population of the 11 markets in Alaska in which surveys were made and the number of military personnel and dependents, April 1963

Market	: : Population :	: : Percentage of total :
Anchorage.....	66,500	26.8
Cordova.....	1,500	.6
Fairbanks.....	25,500	10.3
Homer.....	2,000	.8
Juneau.....	12,000	4.8
Kodiak.....	3,000	1.2
Nome.....	2,500	1.0
Petersburg.....	2,000	.8
Seward.....	2,400	1.0
Soldotna-Kenai.....	6,000	2.4
Valdez.....	900	.4
Department of Defense:		
Military personnel.....	33,000	13.3
Dependents.....	36,000	14.5
Total of above.....	193,300	77.9
Alaska.....	<u>1/</u> 248,000	100.0

1/ U.S. Bureau of Census. Current Population Reports Series P-25, No. 273, Oct. 4, 1963. July 1, 1963, estimate.

Nome, known for its famous gold rush, is 540 air miles west of Fairbanks and about 200 miles from Siberia. From Seattle, it is 2,634 steamship and 2,200 air miles. The economy of Nome is based largely on governmental activities. It is also the main trade and distribution center in northwest Alaska.

Petersburg is situated at the north end of Wrangell Narrows in southeast Alaska. It is 116 air miles south of Juneau. Of the markets surveyed, Petersburg is the closest to Seattle--824 air and 874 steamship miles. Fishing and lumbering make up the main part of the economy.

Seward, lying at the head of Resurrection Bay, is the main seaport for central and interior Alaska and is the southern terminus of the Alaska Railroad. It is 128 highway and 114 railway miles south of Anchorage, and 1,417 miles from Seattle by steamship. Transportation, lumbering, and shrimp canning are the principal industries in the city.

The cities of Soldotna and Kenai, located 11 miles apart, are combined and treated as one market because of their closeness and good highway connection. They are 146 to 157 highway and 70 air miles southwest of Anchorage on the Kenai Peninsula. Soldotna-Kenai is known as the oil capital of Alaska. A military installation also contributes an important part to the economies of the two cities.

Valdez is 120 miles by air and 304 miles by highway east of Anchorage. Located on the shores of Prince William Sound, its year-round harbor accommodates ocean vessels from Seattle some 1,532 miles away. Valdez' economy is based largely on fishing and government (mostly State).

## Procurement Practices

Food retailers in different parts of the State obtain dairy products from a variety of sources. Dairy products are delivered by many methods and the frequency of deliveries varies considerably among the markets. Market size, climate, topography, transportation, and availability of local milk are some of the factors contributing to these differences.

In April 1963, the only sources of outside milk and products of merchants and milk processors in the cities surveyed were west coast cities, principally Seattle, Wash., and Portland, Oreg. The storability and handling of each dairy product determined its method of shipment. Practically all the manufactured products--canned and dried milks--were transported by water. These products have good storability and need no special handling. Most of these products move in larger volumes and at cheaper rates than the more perishable fresh ones, such as whole milk, fresh concentrated milk, cottage cheese, and sour cream, which require refrigeration.

Frequency of water transportation from Seattle to the markets varied considerably. Of the 11 markets surveyed, 8 are served directly by steamship. Anchorage, Fairbanks, and Soldotna-Kenai are served indirectly through Seward and other seaports. Frequency of service to the different markets varies depending on size of market, location in respect to other markets, and weather. Service is offered to Seward twice a week; to Juneau and Petersburg once a week; to Cordova, Valdez, and Kodiak once every 2 weeks; to Homer once every 3 weeks; and to Nome 3 times a year (late May, July, and September).<sup>6</sup> Barge service is offered twice a week to Anchorage and once every 2 weeks to Seward and Whittier.<sup>7</sup>

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<sup>6</sup> No service is offered Homer during December and January because of low volume.

<sup>7</sup> The seaport at Whittier, as well as Seward, serves both Anchorage and Fairbanks via the Alaska Railroad.



Travel time by water to the different markets varies depending on distance, number of stops, and weather. Normally, travel time by steamship from Seattle to Petersburg is 3 1/2 days; Juneau, 4 days; Cordova and Valdez, 6 days; Seward, 5 days; Homer, 6 days; Kodiak, 7 days; and Nome, 11 to 12 days. Travel time by barge to Anchorage is usually 8 1/3 days for a single tow and 10 days for a tandem tow; and to Seward and Whittier about 7 days.

There is truck service daily from Seattle to Fairbanks and Anchorage. Travel time to both cities over the Alaska Highway through Canada is about 112 hours. The trucks stop only for servicing.

Air transport service from Seattle is offered to most of the markets. Only small volumes are flown in, however, consisting mostly of cottage cheese.

Intra-Alaska shipments of Alaska-produced dairy products move mostly by truck. Milk and milk products are delivered by truck to food retailers in Fairbanks, Seward, Soldotna-Kenai, Homer, and Valdez from a processor in Anchorage. Independent milk distributors move these products to the markets, except for Homer and Valdez. In Homer, one food retailer obtains milk from both Soldotna and Anchorage.

Dairy products are flown to merchants in Nome and Cordova from Anchorage. Also, some milk is flown from Anchorage to a limited number of other, somewhat isolated markets.

Intra-Alaska shipments of manufactured dairy products by food wholesalers and food retailers move mostly out of Anchorage. Anchorage wholesalers serve food retailers in Fairbanks by railroad; in the Kenai Peninsula, Palmer, and other small markets by truck. Also, these wholesalers fly dairy products to isolated camps of various kinds. Food retailers in most markets ship evaporated milk, canned whole milk, and so forth, to isolated villages, camps, and homesteads by truck, air, or boat, depending on available transportation.

### Milk Processing and Distributing Facilities

Local milk is processed in Anchorage (including Palmer), Fairbanks, Juneau, Kodiak, Petersburg, and Soldotna. In all but three of these markets, Kodiak, Soldotna, and Petersburg, milk is distributed on both wholesale and home delivery routes. The processor in Soldotna offers only wholesale delivery. Local and State health regulations prevent the two producer-distributors in Kodiak and Petersburg from distributing milk through grocery stores.

Two processors are in the Anchorage market--one a cooperative-owned plant at Palmer, about 48 miles north of town, and the other, an outside-owned plant in Anchorage.<sup>8</sup> The cooperative gets most of its supply from producers in the Matanuska Valley and some from producers near Fairbanks in the Tanana Valley, a distance of over 400 miles. The other plant obtains about 60 percent of its milk supply from Portland, and the rest from Matanuska Valley.

Milk from Portland, including transportation and tank, costs the Anchorage plant about 10 percent less than locally produced milk. Trucks haul the milk from Portland to Seattle. The tanks are then loaded on ships and piggy-backed to Seward. At this point, the tanks are unloaded and connected again to trucks and hauled by highway to Anchorage.

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<sup>8</sup> At the time of the survey, this plant was owned by a corporation located in the State of Washington. Since then, however, the plant has been sold to Arden Farms Dairies in Seattle.

The two plants in the Anchorage market process milk into a wide variety of products. These products include whole milk, skim milk, chocolate drink, buttermilk, half-and-half, whipping cream, sour cream, egg nog, cottage cheese, ice cream, ice milk, and sherbet. In addition, these plants manufacture 3-to-1 concentrated milk and whole milk from nonfat dry milk and cream obtained from outside the State.

Only one plant--a producer-distributor--processes milk in the Fairbanks market. The milk supply for this plant comes from the owner's herd. Products processed are whole milk, buttermilk, skim milk, chocolate drink, half-and-half, whipping cream, and cottage cheese. An independent distributor for the Palmer cooperative also distributes dairy products in the market.

Milk is processed and distributed in the Juneau-Douglas area by a local milk producers' cooperative. The milk supply comes mostly from its three members. Supplemental supplies of outside packaged milk are purchased during periods of milk shortages. Milk is processed into whole milk, buttermilk, commercial cream, and whipping cream.

The milk processor at Soldotna serves Soldotna, Kenai, Homer, and other small villages on the western side of Kenai Peninsula. A few producers in this area supply the milk. Whole milk, buttermilk, chocolate drink, sour cream, and cottage cheese are processed.

Seward has no supply of local milk but does have an independent distributor for the Palmer cooperative. The distributor hauls dairy products regularly from Palmer and distributes them in Seward, Soldotna, Kenai, and other intervening small villages and highway stops.

Frequency of distribution varies in the different markets. Customers on wholesale routes are served more frequently than those on home delivery. Wholesale customers in Fairbanks and Juneau receive daily deliveries Monday through Saturday; in Anchorage, daily Monday through Friday and on Saturday if necessary; and in Seward and Soldotna, twice a week. Home delivery routes are serviced every other day in Anchorage, Fairbanks, and Juneau. These are the only markets having this service.

Various sizes and kinds of containers are used to distribute milk in the 11 markets. Except in Homer, milk is sold in half-gallon and quart containers in all markets. Only quart containers are sold in Homer. Milk is also sold in half-pints and bulk containers in some markets. The largest volume, 53 percent, of all milk is sold in half-gallons, 16 percent in quarts, 24 percent in half-pints, and about 7 percent in bulk. Paper cartons are used exclusively in retail food stores; however, both glass and paper containers are used for home deliveries, particularly in Fairbanks and Juneau.

## Market Sales of Dairy Products

The dairy products surveyed in the 11 markets differ according to their substitutability with other products, freshness, degree of processing, and storability. The products can be classed, on the basis of these factors, into four categories: bottled milk products; canned liquid and dry milk; cream and related products; and cottage cheese.

### Total Sales Volume

In April 1963, civilians in the 11 markets purchased an estimated 1,506,665 quarts of bottled and canned liquid milk and dry milk products. Total purchases of cream and related products and cottage cheese were relatively minor (table 7). Sales were largest for homogenized milk, nonfat dry milk, and evaporated milk. Homogenized milk constituted slightly over 67 percent of all bottled milk products, nonfat dry milk, 56 percent, and evaporated milk, 39 percent of all canned liquid and dry milks.

Table 7.--Estimated sales of dairy products (excluding sales to the military) in 11 Alaskan markets, April 1963

Product	Anchorage	Cordova	Fairbanks	Homer	Juneau	Kodiak	Nome	Petersburg	Seward	Soldotna	Kenai	Valdez	Total
	Quarts	Quarts	Quarts	Quarts	Quarts	Quarts	Quarts	Quarts	Quarts	Quarts	Quarts	Quarts	Quarts
<u>Bottled milk products 1/</u>													
Homogenized milk.....	283,721	1,424	87,357	1,235	88,895	3,572	490	12,352	5,363	24,925	2,004	511,338	
Recombined milk.....	82,949	---	5,224	---	---	---	---	---	---	---	---	88,173	
Recombined concentrated milk (3-to-1).....	9,605	---	1,036	---	---	---	---	---	201	---	---	10,842	
Concentrated milk (3-to-1):	59,056	---	54,242	---	---	150	---	---	4,213	1,308	249	119,218	
Skim milk.....	10,587	---	732	---	427	---	---	129	---	---	---	11,875	
Buttermilk.....	11,259	178	2,408	69	1,503	512	---	332	308	327	89	16,985	
Chocolate drink (or milk):	3,340	22	631	59	188	---	---	80	54	92	---	4,466	
Total.....	460,517	1,624	151,630	1,363	91,013	4,234	490	12,893	10,139	26,652	2,342	762,897	
<u>Canned liquid and dry milks:</u>													
Evaporated milk 2/.....	146,744	5,298	59,542	2,720	17,207	8,187	11,183	9,860	7,384	18,516	3,389	290,030	
Condensed milk 2/.....	371	50	354	27	80	---	---	38	140	83	720	1,863	
Whole milk.....	851	4,255	1,396	661	328	4,010	120	144	267	1,013	192	13,237	
Chocolate drink (or milk):	165	132	---	---	101	---	---	---	13	---	---	411	
Nonfat dry milk 3/.....	270,721	6,414	53,920	5,375	32,255	6,906	1,956	7,062	10,061	21,809	2,502	418,981	
Dry whole milk 3/.....	5,038	596	1,945	598	265	540	246	510	711	1,213	1,360	13,022	
Dry buttermilk 3/.....	3,662	168	200	578	379	60	180	30	311	560	---	6,128	
Dry chocolate milk 3/.....	---	---	---	---	---	---	96	---	---	---	---	96	
Total.....	427,552	16,913	117,357	9,959	50,615	19,703	13,781	17,644	18,887	43,194	8,163	743,768	
<u>Cream and related products 4/</u>													
Whipping cream.....	2,652	124	578	9	646	93	15	278	159	78	162	4,794	
Commercial cream.....	206	66	48	9	266	39	5	78	33	20	84	854	
Half and half.....	3,647	---	718	13	340	---	---	58	63	80	11	4,930	
Sour cream.....	2,092	---	524	9	270	153	13	70	22	44	15	3,212	
Yogurt.....	372	---	280	---	116	---	---	12	---	---	8	782	
<u>Cottage cheese 4/</u>													
All kinds (dry, creamed, chive, etc.).....	12,724	66	5,260	244	3,374	270	150	580	382	801	89	23,940	

1/ Concentrated milks reconstituted to whole milk, otherwise actual product.

2/ Whole milk equivalent.

3/ Fluid product equivalent.

4/ Actual product.

Only in Anchorage, Fairbanks, and Juneau were total sales of bottled milk products higher than canned liquid and dry milks. Sales of bottled milk products were 8 percent higher in Anchorage, 29 percent higher in Fairbanks, and 80 percent higher in Juneau. Sales of bottled milk products in the other markets were much lower. Locally produced milk accounted for about 76 percent of the total bottled milk products (excluding recombined milks) in the Anchorage market; 65 percent in Juneau; and 52 percent in Fairbanks.

Homogenized milk was the biggest seller of bottled milk products in each market. Concentrated milk made up over a third of sales in Seward and Fairbanks and over 10 percent of sales in Anchorage and Valdez. Recombined milks constituted about a fifth of bottled milk sales in Anchorage.

Among the canned liquid and dry milks, nonfat dry milk and evaporated milk were the biggest sellers. Sales of nonfat dry milk were higher in 6 markets and sales of evaporated milk in 5. Canned whole milk was an important part of sales in Kodiak and Cordova.

### Daily Per Capita Sales

Daily sales of bottled milk products and canned liquid and dry milks averaged about 0.4 quart per capita for all markets during April 1963 (table 8). Per capita sales were higher than the 11 market average in 3 markets, slightly lower than average in 5, and considerably lower than average in 3.

Sales of bottled milk products and canned liquid and dry milks were about evenly divided at one-fifth quart per capita. However, there was considerable variation among markets. Sales of bottled milk products ranged from 0.2528 quart per capita in Juneau to only 0.0065 quart in Nome. Wide variation among markets resulted from differences in (1) market supply, (2) consumer prices, (3) consumer income, (4) price differential between these products and available substitutes, and (5) consumer likes and dislikes. Per capita sales of canned liquid and dry milks varied less among markets than did those of bottled milk products. Sales were highest in Cordova at 0.3758 quart per capita and lowest in Juneau at 0.1406 quart. This reduction in variation among markets was due largely to (1) better availability of supplies, (2) lower consumer prices, and (3) ease of storage in homes.

### Costs and Margins

A computation of costs and margins for selected dairy products shows that the buying prices, transportation and handling charges, markups, and selling prices varied among the different markets.<sup>9</sup> Variations in buying prices resulted from purchasing from different suppliers, volume and cash discounts, and buying products in different size containers. Transportation and handling charges varied because of differences in (1) distance, (2) volume, (3) method used (cubic or hundredweight) to determine ocean-freight rate, (4) handling rates of Alaskan ports, and (5) drayage charges for some markets. Likely factors causing variations in markups among the markets were differences in costs, size of operations, competition among firms, product turnover, and so forth. Selling prices varied because of differences in buying prices, transportation and handling charges, and markup.

### Homogenized Milk

Prices paid by grocers for locally produced milk were highest in Nome and lowest in Juneau (table 9).<sup>10</sup> Prices in Nome were 92 and 90 percent higher per quart and half-gallon,

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<sup>9</sup> Selling prices shown in tables 10 to 14 do not reflect (1) the lower prices received by grocers for the volume of products sold because of price specials, and (2) lower prices received for products sold by the case.

<sup>10</sup> Includes buying price, and transportation, and handling charges.



Table 8.--Per capita daily sales of specified dairy products, 11 Alaskan markets,  
April 1963

PER CAPITA SALES			
Market	Bottled milk products	Canned liquid and dry milks	All products
	<u>Quarts</u>	<u>Quarts</u>	<u>Quarts</u>
Anchorage.....	0.2308	0.2143	0.4451
Cordova.....	.0361	.3758	.4119
Fairbanks.....	.1982	.1534	.3516
Homer.....	.0227	.1660	.1887
Juneau.....	.2528	.1406	.3934
Kodiak.....	.0470	.2189	.2659
Nome.....	.0065	.1837	.1902
Petersburg.....	.2149	.2941	.5090
Seward.....	.1408	.2623	.4031
Soldotna-Kenai.....	.1481	.2400	.3881
Valdez.....	.0867	.3023	.3890
Average.....	.2046	.1995	.4041

PERCENTAGE OF TOTAL SALES			
	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>
Anchorage.....	52	48	100
Cordova.....	9	91	100
Fairbanks.....	56	44	100
Homer.....	12	88	100
Juneau.....	64	36	100
Kodiak.....	18	82	100
Nome.....	3	97	100
Petersburg.....	42	58	100
Seward.....	35	65	100
Soldotna-Kenai.....	38	62	100
Valdez.....	22	78	100
Average.....	51	49	100

PERCENTAGE OF 11 MARKET AVERAGE			
Anchorage.....	113	107	110
Cordova.....	18	188	101
Fairbanks.....	97	77	87
Homer.....	11	83	47
Juneau.....	124	70	97
Kodiak.....	23	110	66
Nome.....	3	92	47
Petersburg.....	105	147	126
Seward.....	69	131	100
Soldotna-Kenai.....	72	120	96
Valdez.....	42	152	96
Average.....	100	100	100

Table 9.--Homogenized milk: Costs and margins per half-gallon and quart, locally produced and outside milk,  
11 Alaskan markets, April 1963

Source, container size, and market level	Anchorage	Cordova	Fairbanks	Homer	Juneau	Kodiak	Nome	Petersburg	Seward	Kenai	Soldotna	Valdez
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
<u>Locally produced milk</u>												
Per half-gallon:												
Price to consumers.....	87.9	118.0	98.1	---	66.3	---	137.0	---	87.9	89.7	99.0	99.0
Retail price spread.....	9.9	20.0	14.1	---	3.3	---	17.0	---	9.9	9.7	10.0	10.0
Price to grocers.....	78.0	98.0	84.0	---	63.0	---	120.0	---	78.0	80.0	89.0	89.0
Transportation and handling: charge.....	---	20.0	---	---	---	---	42.0	---	---	---	14.0	14.0
Buying price.....	78.0	78.0	84.0	---	63.0	---	78.0	---	78.0	80.0	75.0	75.0
Per quart:												
Price to consumers.....	45.0	60.0	49.1	48.4	33.4	---	69.0	---	45.0	46.4	55.0	55.0
Retail price spread.....	5.0	10.0	7.1	5.1	1.4	---	7.6	---	5.0	5.7	10.0	10.0
Price to grocers.....	40.0	50.0	42.0	43.3	32.0	---	61.4	---	40.0	40.7	45.0	45.0
Transportation and handling: charge.....	---	10.0	---	.8	---	---	21.4	---	---	---	7.0	7.0
Buying price.....	40.0	40.0	42.0	42.5	32.0	---	40.0	---	40.0	40.7	38.0	38.0
<u>Outside milk 1/</u>												
Per half gallon:												
Price to consumers.....	88.0	---	100.0	---	65.4	84.4	---	71.5	---	---	100.0	100.0
Retail price spread.....	2.8	---	14.6	---	7.3	14.1	---	13.1	---	---	26.5	26.5
Price to grocers.....	85.2	---	85.4	---	58.1	70.3	---	58.4	---	---	73.5	73.5
Transportation and handling: charge.....	39.7	---	39.7	---	11.8	22.4	---	12.9	---	---	28.0	28.0
Buying price.....	45.5	---	45.7	---	46.3	47.9	---	45.5	---	---	45.5	45.5
Per quart:												
Price to consumers.....	45.0	---	49.7	---	33.3	43.0	---	36.6	---	---	52.0	52.0
Retail price spread.....	1.8	---	6.5	---	3.9	6.6	---	7.0	---	---	14.7	14.7
Price to grocers.....	43.2	---	43.2	---	29.4	36.4	---	29.6	---	---	37.3	37.3
Transportation and handling: charge.....	20.2	---	20.2	---	6.0	11.4	---	6.6	---	---	14.3	14.3
Buying price.....	23.0	---	23.0	---	23.4	25.0	---	23.0	---	---	23.0	23.0

1/ Seattle, Wash., area.



respectively, than prices paid by grocers for milk in similar size containers in Juneau. The price differential between the two markets consisted of buying price, 27 percent, and transportation charges, 73 percent.

Prices paid by grocers for outside milk were highest in Fairbanks and Anchorage and lowest in Juneau. Prices for quarts and half-gallons in Anchorage and Fairbanks were each about 47 percent higher than in Juneau. Seattle buying prices for Juneau grocers were slightly higher than for grocers in Anchorage and Fairbanks.<sup>11</sup> However, transportation and handling charges were much higher for Anchorage and Fairbanks--about 237 percent. Much of this difference in transportation costs was because of the higher cost of transporting milk by truck from Seattle.

The prices paid by grocers for local milk were lower than those for outside milk in Anchorage and Fairbanks and higher in Juneau and Valdez. Grocers in Fairbanks paid about 1.7 percent more and in Anchorage about 9 percent more for a half-gallon of outside milk. Grocers in Juneau and Valdez, on the other hand, paid 8 and 21 percent higher prices, respectively, for the same size container of local milk than for outside milk.

Selling prices. --In April 1963, retail prices for homogenized milk varied considerably among markets. The price for a half-gallon in Nome was 109 percent higher than in Juneau and 92 percent higher than in Petersburg. However, in Nome the price for a half-gallon was only 16 percent higher than in Cordova. Prices were less varied among the Anchorage, Seward, and Soldotna-Kenai markets. The closer proximity of these markets and the possibility of greater competition among local processors probably account for the smaller price variation.

Retail prices for local milk in most markets were slightly lower than those for outside milk. However, grocers in some of these markets sold outside milk at local milk prices. Grocers in the Fairbanks and Juneau markets had the largest differentials in selling prices--amounting to as much as 11 cents in Fairbanks and 5 cents in Juneau. Consumer prices among grocers in individual markets varied less for local milk than for outside milk.

Marketing margins. --The difference between the buying price and the consumer price is the gross marketing margin. It varied among markets because of differences in buying prices, transportation costs, and markups. Except for Kodiak, buying prices for milk of similar butterfat tests varied only slightly among markets. Purchases of frozen milk caused the higher Kodiak price.

The gross marketing margins for outside milk were highest for Valdez and Fairbanks and lowest for Juneau. In Valdez, margins were high because of high transportation costs and the largest markups of all markets. In Fairbanks, the high margin was caused mostly by high transportation costs.

The gross margin for local milk varied considerably among markets. Differences in transportation costs accounted for most of the intermarket variation. Delivery cost to grocers in the bigger markets was a part of their buying price and did not appear as a separate item of cost. Nome and Cordova obtained milk by air freight; therefore, transportation costs appeared as a separate item for these markets.

### Concentrated Milk

Prices paid. --Concentrated milk was sold in one-third quart and quart containers in four markets--Anchorage, Fairbanks, Seward, and Soldotna-Kenai. Only one-third quarts were sold in Kodiak, and only quarts in Valdez (table 10)

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<sup>11</sup> Part of the difference in selling prices can be attributed to the purchase of premium milk in the Juneau market.

Table 10.--Concentrated milk (3-to-1): Costs and margins per one-third quart and quart, 6 Alaskan markets, April 1963

Container size and market level	Anchorage	Fairbanks	Kodiak	Seward	Soldotna- Kenai	Valdez
	Cents	Cents	Cents	Cents	Cents	Cents
<u>One-third quart</u>						
Price to consumers.....	33.0	37.4	36.0	34.9	40.0	---
Retail price spread.....	3.0	8.9	8.6	4.8	8.5	---
Price to grocers.....	30.0	28.5	27.4	30.1	31.5	---
Transportation and handling charge.....	6.5	7.0	3.9	6.6	8.0	---
Buying price.....	23.5	21.5	23.5	23.5	23.5	---
<u>Quart</u>						
Price to consumers.....	98.3	111.0	---	99.0	105.3	113.0
Retail price spread.....	12.4	28.7	---	13.0	14.9	32.1
Price to grocers.....	85.9	82.3	---	86.0	90.4	80.9
Transportation and handling charge.....	20.4	21.8	---	20.5	24.9	15.4
Buying price.....	65.5	60.5	---	65.5	65.5	65.5

Grocers in Soldotna-Kenai paid higher prices for concentrated milk in April 1963 than in any other market. Prices paid for quarts were lowest in Valdez and for one-third quarts in Kodiak.

Buying prices of concentrated milk from Seattle for both sizes of containers were the same for all markets except Fairbanks. Grocers in Fairbanks paid 5 cents less for quarts and 2 cents less for one-third quarts than those in the other markets.

Selling prices. --Consumer prices for concentrated milk were lowest in Anchorage. Compared with the highest priced markets, prices in Anchorage were 17.5 percent lower per one-third quart than in Soldotna-Kenai and 13 percent lower per quart than in Valdez.

Recombined concentrated milk was sold in Anchorage, Fairbanks, and Seward. Consumer prices for this product were the same as for fresh concentrated milk in Anchorage and Seward. However, some grocers in Fairbanks sold the recombined product at a slightly lower price than the fresh concentrate.

Marketing margins. --Anchorage had the lowest gross marketing margins for concentrated milk among the 11 markets studied, whereas, Fairbanks and Soldotna-Kenai had the highest. The margin in Soldotna-Kenai for one-third quart was 74 percent higher and in Fairbanks 54 percent higher per quart than in Anchorage. The high margin in Soldotna-Kenai was due to higher transportation costs than in the other markets and a relatively high markup. The high margin in Fairbanks was largely due to large markup. Valdez had the highest markup per quart of concentrated milk, although its transportation rates were the lowest.

## Canned Whole Milk

Prices paid. --Grocers in most markets obtained canned whole milk direct from wholesalers in the Seattle-Tacoma, Wash., area. However, grocers in Anchorage, Fairbanks, Seward, and Soldotna-Kenai obtained most of their supplies from wholesalers in Anchorage (table 11).

Prices paid by grocers for canned whole milk obtained directly from outside wholesalers varied considerably among markets. Variations in prices paid resulted from differences in (1) Seattle buying prices, (2) brands purchased, and (3) transportation costs. The price paid for canned whole milk was lowest for Juneau and highest for Nome. The Nome price was almost 26 percent higher than the Juneau price. Higher transportation costs accounted for all the difference, since the Seattle buying prices for both markets were the same.

Grocers in Anchorage, Fairbanks, and Soldotna-Kenai who bought directly from outside wholesalers paid less for canned whole milk than grocers who bought from Anchorage wholesalers. The Anchorage wholesale price was higher than the "landed" cost from Seattle, even assuming they paid the highest listed freight rates from Seattle to these markets.

Selling price. --Consumer prices for canned whole milk varied among markets, as well as among grocers in individual markets. Prices ranged from a high of 60.8 cents in Fairbanks to a low of 41.9 cents in Juneau. Although transportation cost for Nome was 6 cents higher than that for Fairbanks, the consumer price in Nome was 0.6 cent lower than in Fairbanks. However, selling prices among grocers in Fairbanks ranged from 55 to 63 cents a quart.

Marketing margins. --The gross marketing margins for canned whole milk varied among markets because of differences in transportation costs and retail markups. Retail markups varied more than did transportation costs, as well as making up the larger share of the gross margin. Nome had the highest gross marketing margin. It was 119 percent higher than in Juneau, but only 6 percent higher than in Fairbanks. The high margin in Fairbanks resulted from retail markups which were higher than in any other market.

## Evaporated Milk

Prices paid. --Prices paid by grocers for a 14.5 ounce can of evaporated milk ranged from 18.0 cents for Homer to 15.5 cents for Juneau and Petersburg (table 12).<sup>12</sup> However, assuming no difference in Seattle buying price, prices paid would have been higher in Nome because transportation costs were higher. Most, and in some markets all, variations in prices paid among markets resulted from differences in transportation costs, since Seattle buying prices varied only slightly.

Retail grocers in Anchorage, Fairbanks, Seward, and Soldotna-Kenai paid less for evaporated milk from Anchorage wholesalers than from Seattle wholesalers. Because of large volume purchases, Anchorage wholesalers were able to obtain slightly lower prices from Seattle wholesalers and the lowest transportation costs available.

Selling prices. --Consumer prices for a 14.5 ounce can of evaporated milk ranged from 23.4 cents in Nome to 17.8 cents in Juneau. Variation among markets were largely due to differences in markups, although prices paid did vary. Retail grocer markups ranged from a high of 47.8 percent for Cordova to only 8.1 percent for Soldotna-Kenai. Retail markup for Juneau, the market with the lowest consumer prices, was only 14.8 percent.

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<sup>12</sup> Evaporated milk was sold in 8 ounce, 13.6 ounce, and 14.5 ounce containers; however, the 14.5 ounce size was the most popular.

Table 11.--Canned whole milk: Costs and margins per quart in 11 Alaskan markets, April 1963

Source and market level	Anchorage	Cordova	Fairbanks	Homer	Juneau	Kodiak	Nome	Petersburg	Seward	Soldotna	Valdez
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
<u>Alaskan wholesaler</u>											
Price to consumers.....	52.3	---	57.0	---	---	---	---	---	49.6	45.7	---
Retail price spread.....	13.0	---	16.5	---	---	---	---	---	10.6	7.1	---
Price to retail grocer.....	39.3	---	40.5	---	---	---	---	---	39.0	38.6	---
Transportation and handling charge.....	.5	---	.5	---	---	---	---	---	---	.4	---
Wholesale selling price.....	38.8	---	40.0	---	---	---	---	---	39.0	38.2	---
Wholesale price spread.....	4.4	---	5.6	---	---	---	---	---	6.9	6.2	---
Price to wholesaler.....	34.4	---	34.4	---	---	---	---	---	32.1	32.0	---
Transportation and handling charge.....	4.0	---	4.0	---	---	---	---	---	4.0	4.0	---
Buying price.....	30.4	---	30.4	---	---	---	---	---	28.1	28.0	---
<u>Outside wholesaler</u>											
Price to consumers.....	50.0	44.3	60.8	51.0	41.9	43.2	59.0	43.9	---	48.0	49.6
Retail price spread.....	17.9	9.4	26.3	14.2	11.3	9.6	20.5	11.7	---	13.3	17.1
Price to retail grocer.....	32.1	34.9	34.5	36.8	30.6	33.6	38.5	32.2	---	34.7	32.5
Transportation and handling charge.....	4.0	6.1	5.0	6.4	3.1	5.4	11.0	3.9	---	7.2	5.0
Buying price.....	28.1	28.8	29.5	30.4	27.5	28.2	27.5	28.3	---	27.5	27.5

Table 12.--Evaporated milk: Costs and margins per 14.5 ounce can in 11 Alaskan markets, April 1963

Source and market level	Anchorage	Cordova	Fairbanks	Homer	Juneau	Kodiak	Nome	Petersburg	Seward	Soldotna-- Kenai	Valdez
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
<u>Alaskan wholesaler</u>											
Price to consumers.....	18.8	---	21.9	23.5	---	---	---	---	19.7	19.1	---
Retail price spread.....	2.9	---	5.4	5.4	---	---	---	---	3.0	1.7	---
Price to retail grocer.....	15.9	---	16.5	18.1	---	---	---	---	16.7	17.4	---
Transportation and handling charge.....	1/	---	.1	1.9	---	---	---	---	---	1.1	---
Wholesale selling price.....	15.9	---	16.4	16.2	---	---	---	---	16.7	16.3	---
Wholesale price spread.....	.3	---	.2	.6	---	---	---	---	.7	.7	---
Price to wholesaler.....	15.6	---	16.2	15.6	---	---	---	---	16.0	15.6	---
Transportation and handling charge.....	2.2	---	2.2	2.2	---	---	---	---	2.2	2.2	---
Buying price.....	13.4	---	14.0	13.4	---	---	---	---	13.8	13.4	---
<u>Outside wholesalers</u>											
Price to consumers.....	19.6	20.9	21.4	21.5	17.8	21.4	23.4	19.6	19.5	18.2	21.1
Retail price spread.....	2.8	5.0	4.2	3.4	2.3	4.5	5.8	4.1	2.1	.4	3.7
Price to retail grocer.....	16.8	15.9	17.2	18.1	15.5	16.9	17.6	15.5	17.4	17.8	17.4
Transportation and handling charge.....	2.3	2.6	3.0	3.5	1.7	2.9	4.0	1.9	3.5	3.9	2.7
Buying price.....	14.5	13.3	14.2	14.6	13.8	14.0	13.6	13.6	13.9	13.9	14.7

1/ Less than .05 cent.

Table 13.--Nonfat dry milk: Cost and margins per quart in 11 Alaskan markets, April 1963 1/

Source and market level	Anchorage	Cordova	Fairbanks	Homer	Juneau	Kodiak	Nome	Petersburg	Seward	Soldotna-- Kenai	Valdez
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
<u>Alaskan wholesaler</u>											
Price to consumers.....	9.8	---	10.6	10.2	---	---	---	---	9.4	9.6	---
Retail price spread.....	2.2	---	2.9	2.4	---	---	---	---	1.7	1.8	---
Price to retail grocer.....	7.6	---	7.7	7.8	---	---	---	---	7.7	7.8	---
Transportation and handling charge.....	2/	---	2/	.4	---	---	---	---	---	.2	---
Wholesale selling price.....	7.6	---	7.7	7.4	---	---	---	---	7.7	7.6	---
Wholesale price spread.....	.4	---	.5	.4	---	---	---	---	.6	.5	---
Price to wholesaler.....	7.2	---	7.2	7.0	---	---	---	---	7.1	7.1	---
Transportation and handling charge.....	.5	---	.5	.5	---	---	---	---	.5	.5	---
Buying price.....	6.7	---	6.7	6.5	---	---	---	---	6.6	6.6	---
<u>Outside wholesaler</u>											
Price to consumers.....	9.8	9.7	10.2	9.8	8.6	10.2	12.2	10.1	9.9	9.7	9.9
Retail price spread.....	2.7	2.3	3.2	2.1	1.3	2.4	4.4	2.7	1.9	1.7	2.3
Price to retail grocer.....	7.1	7.4	7.0	7.7	7.3	7.8	7.8	7.4	8.0	8.0	7.6
Transportation and handling charge.....	.5	.5	.6	.7	.4	.6	.9	.4	.8	.9	.6
Buying price.....	6.6	6.9	6.4	7.0	6.9	7.2	6.9	7.0	7.2	7.1	7.0

1/ Fluid equivalent.

2/ Less than 0.5 cent.



Marketing margins. --The gross marketing margin for a 14.5 ounce can of evaporated milk ranged from 4.0 cents for Juneau to 9.8 cents for Nome. The Nome margin was higher because of higher transportation cost and larger retail markup. Markups, retail and wholesale in some markets, accounted for the largest share of the gross marketing margins for all markets, except Soldotna-Kenai. Markups accounted for over 60 percent of the gross margins for Cordova, Fairbanks, Kodiak, Petersburg, and Seward; however, for Soldotna-Kenai it was only 27.5 percent.

### Nonfat Dry Milk

Prices paid. --Prices paid per quart-equivalent of nonfat dry milk varied from 7 to 8 cents (table 13). Buying prices differed slightly and accounted for this narrow range. Transportation cost varied significantly among markets, but they were only a minor part of prices paid. The share that transportation costs was of prices paid ranged from only 5.5 percent for Juneau to 11.5 percent for Nome.

Selling prices. --Consumer prices per quart-equivalent of nonfat dry milk ranged from 8.6 cents for Juneau to 12.2 cents for Nome. Retail markups accounted for all the difference in selling price between the two markets. Differences in markups also accounted for most or all variations in selling prices among the other markets.

Marketing margins. --Gross marketing margins were lowest for Juneau and highest for Nome. It was 2.1 times higher for Nome than for Juneau, mostly because of the higher retail markup for Nome. Retail markup accounted for as much as 87.1 percent of the gross margin for Petersburg to only 71.4 percent of that for Soldotna-Kenai.

### Competitive Relationships

One objective of this study is to examine the competitive relationships for dairy products between markets, between retail and wholesale outlets in each market, and between fluid milk and other substitute products.

Direct competition for dairy products between the markets surveyed is limited because of: (1) combination of distance and topography; (2) inadequate intermarket transportation facilities; (3) smallness of markets; and (4) dependency upon outside supplies. Some markets, such as Cordova, Juneau, Kodiak, Nome, Petersburg, and Valdez, are relatively isolated from each other. Little or no trade in dairy products exists among them. However, trade does exist between Anchorage and some markets. The trade is essentially one-way; that is, Anchorage serves as the supplier only. Food wholesalers in Anchorage serve as intermediate suppliers of outside manufactured dairy products to Fairbanks, Seward, Soldotna-Kenai, and Homer. Milk processors in Anchorage supply not only these markets, but also, Cordova, Valdez, and Nome.

Although there is relatively little competition between most markets, a general pricing pattern exists for both manufactured and fresh milk products. Because of the dependency on Seattle for outside supplies, the price level established in most markets for canned liquid and dry milks is usually based on the Seattle price and transportation costs. Retail prices established for fresh milk in most markets are determined by bargaining between processors and retailers. The landed cost for outside fresh milk undoubtedly plays a big role in price determination. Retail prices established in such markets as Cordova and Nome for fresh milk obtained from Anchorage processors are based on the Anchorage wholesale price and transportation cost.

### Intermarket Among Firms

Food retailers in most markets had somewhat limited sales; population in 8 of the 11 markets was less than 10,000. The number of retailers in each market varied but not in direct proportion to market population.



Product differentiation among retail food stores was achieved largely by handling products with different brand names. Further differentiation came about in many markets by some retailers handling products--such as concentrated milk--not handled by others. Food retailers in some markets said that there was some differentiation in quality between local and outside milk, particularly during a 2 to 3 week period in the spring and fall. Local products were said to have poor keeping quality during these periods.

Market entry appeared to be unrestricted for all markets surveyed. However, construction, inventory, and operating costs are relatively high, and some markets may be already oversupplied with retail food outlets.

Some indications of market conduct are the methods used to determine consumer prices and to promote sales. Generally, retail food stores and wholesalers in each market used the west coast buying price, transportation and handling cost, and a percentage markup to cover operating costs in pricing outside dairy products. These factors varied among markets and among stores in the same market. Among stores in any particular market, the selling prices for local milk products, outside bottled milk, and evaporated milk were less variable than those for nonfat dry milk, canned whole milk, and outside cottage cheese. Sales promotion, particularly weekend price specials, was important in some markets. Products promoted were usually evaporated milk and nonfat dry milk.

#### Intramarket Among Products

Considerable competition existed among products in each market for potential fresh milk sales. High consumer prices for fresh milk in most markets have caused many consumers to substitute, either in part or in whole, lower priced evaporated milk, nonfat dry milk, canned whole milk or other products for fresh milk.

Some consumers, particularly native born, have become accustomed to using fresh milk substitutes and prefer them to fresh milk. However, there were many others who, although they preferred fresh milk, found that the substitutes had certain economic and physical characteristics which made them more attractive than fresh milk. For example, they are cheaper, can be stored at room temperature, have longer storability, and are less bulky.

Probably the biggest competitive factor affecting fresh milk consumption is the difference in consumer prices between fresh milk and its substitutes. Except for canned whole milk, consumer prices were considerably lower for the substitutes. Selling prices per quart for fresh milk and its substitutes varied both among products and among markets. Price differences among markets between fresh milk and nonfat dry milk ranged from 24.3 to 56.6 cents; from 13.3 to 43.0 cents for evaporated milk; and from 6.6 to 14.3 cents for concentrated milk. However, in 8 of the 11 markets canned whole milk sold for a higher price than fresh milk.

#### DEPARTMENT OF DEFENSE

The military purchases sizable quantities of dairy products, especially milk, from processors in Palmer and Anchorage. In April 1963, the military had contracts with the Palmer processor to supply installations north of the Alaska Range and the Kodiak Naval Base, and with the Anchorage processor to supply the other military installations south of the Range. In addition to these contracts which were for milk and other products for troop use, the military purchases dairy products for resale through commissaries.

Previous to 1960, troops were fed recombined milk which was obtained under contract from processors. This product was made from nonfat dry milk and cream or butteroil obtained from suppliers on the outside.

In 1960, the military shifted from using recombined milk to fresh local milk. Producers in the Matanuska and Tanana Valleys stepped up production to meet this new demand. From 1959 to 1961, production increased 39 percent, but it dropped slightly in 1962. This decline indicates that producers may have increased production more than was necessary.

There are some elements of uncertainty for producers of local milk who supply the military. The supply contracts, obtained on a competitive price-bid basis, are for 1 year only. Therefore, no supplier knows whether he will have the same contract the following year. There is also the uncertainty that the Anchorage processor, who obtains a large share of his milk supply from the west coast, will be able to outbid the cooperative. As of April 1963, the processor in Anchorage supplied the military with over 50 percent of the milk obtained for troop issue. The cooperative could be left with an unwanted supply of milk should it lose any more of the military contracts.

Another big uncertainty is the changing number of military personnel in Alaska. This number reached its peak during World War II, but dropped sharply in the late forties. The number built up again during the Korean conflict to about one-third the World War II peak. Since then, the number of military personnel has dropped to about 33,000. The number may drop further.

### Volume of Products

Alaska military installations obtain most of their dairy products from the Seattle Defense Subsistence Supply Center. Each major installation--Forts Elmendorf, Richardson, Eielson, and Wainwright, and the Kodiak Naval Base--requisitions supplies as they are needed. These installations supply smaller ones scattered throughout the State. Requisitions are made for dairy products for troop issue and for resale through commissaries and post exchanges.

Concentrated whole milk and fresh whole milk were the products obtained in largest volume (table 14). Concentrated milk was resold largely through military commissaries; but almost all the whole milk, 90 percent, was served to the troops.

### Comparison of Buying and Selling Prices

Except for homogenized milk and cottage cheese, the military paid the same as local merchants for local dairy products purchased for resale in commissaries (table 15). In the Anchorage market, the military paid less for both homogenized milk and cottage cheese; in Fairbanks, they paid less only for cottage cheese.

Although buying prices for most products were the same for commissaries and local merchants, military dependents who bought from commissaries paid lower prices than did civilians who bought from local grocery stores. This can be attributed to the differences in methods used to price products for resale. The commissaries priced items at their basic cost plus an additional 2 percent to cover operating cost. No markup was allowed for any transportation cost or profit. The local merchant had to add to the basic cost enough markup to cover any transportation cost, operating cost, overhead cost, and profit.

### CHANGES IN MILK MARKETING SINCE 1957

Milk marketing in Alaska has changed considerably since July 1957. The following comparisons for the State and for four markets--Anchorage, Fairbanks, Juneau, and Kodiak--show some of the changes that occurred during the nearly 6-year period. Significant changes also occurred in use of dairy products by the Department of Defense.

Table 14.--Estimated consumption of dairy products by military installations in Alaska, April 1963

Product	Source of supply		Total
	Local	Outside	
	Quarts	Quarts	Quarts
<u>Bottled milk products</u>			
Homogenized milk.....	1/425,225	2,099	427,324
Recombined milk.....	786	---	786
Concentrated milk (3-to-1) 2/.....	---	536,650	536,650
Skim milk.....	1,168	---	1,168
Buttermilk.....	2,744	668	3,412
Chocolate milk.....	924	---	924
Total.....	430,847	539,417	970,264
<u>Canned liquid and dry milks</u>			
Evaporated milk 2/.....	---	43,021	43,021
Whole milk.....	---	16,351	16,351
Condensed milk 2/.....	---	1,698	1,698
Chocolate milk.....	---	46	46
Nonfat dry milk 3/.....	---	25,015	25,015
Dry whole milk 2/.....	---	64	64
Total.....	---	86,195	86,195
<u>Cream and other related products 4/</u>			
Whipping cream.....	257	---	257
Half-and-half.....	193	---	193
Commercial cream.....	---	150	150
Sour cream.....	267	674	941
<u>Cottage cheese 4/</u>			
All kinds, (dry, creamed, chive, etc.).....	7,738	1,996	9,764

1/ Technically, not all of this milk was produced in Alaska. Slightly over 50 percent of the milk and about 35 percent of the cottage cheese came from the Anchorage processor who obtained some 60 percent of his milk supply from the outside. All or most of the ingredients used in recombined milk and cottage cheese came from the outside.

2/ Reconstituted to whole milk.

3/ Reconstituted to fluid skim milk.

4/ Actual product.



## Outside Shipments

From July 1957 to April 1963, outside shipments of fresh dairy products to Alaska from Washington and Oregon rose about 140 percent (table 16). Of the individual products, shipments of concentrated milk increased the most--almost 510 percent. Homogenized milk increased 84 percent, although shipments of packaged milk declined about 15 percent. The big change was in shipments of bulk milk. Frozen milk dropped to insignificant proportions--almost 95 percent.

Table 16.--Changes in shipments of fresh dairy products to Alaska,  
July 1957 and April 1963 <sup>1/</sup>

Product	July 1957		April 1963		Change
	Pounds	Percent	Pounds	Percent	Percent
Homogenized milk <sup>2/</sup> ...	444,807	45.8	818,256	35.0	+ 84.0
Frozen milk.....	280,124	28.8	11,477	.5	- 94.9
Concentrated milk <sup>3/</sup> ..	246,931	25.4	1,505,056	64.5	+509.5
Total.....	971,862	100.0	2,334,789	100.0	+140.2

<sup>1/</sup> Data obtained from market administrator, Federal Order No. 125, Seattle, Wash., and Alaskan firms.

<sup>2/</sup> Pounds of products; also includes small quantities of chocolate drink, commercial cream, whipping cream, buttermilk, skim milk, half-and-half, and sour cream.

<sup>3/</sup> Whole milk equivalent.

## Dairy Products Utilized

Total sales. --Total estimated sales of both bottled milk products and canned liquid and dry milks for the four markets increased about 23.5 percent, or roughly in line with the population increase (table 17). Sales of canned liquid and dry milks apparently increased more, about 30.0 percent, than did sales of bottled milk products, about 18.3 percent.

A big change occurred in the composition of bottled milk products. The volume of homogenized milk sold slipped from 90.0 percent to 65.5 percent of the total volume of all bottled milk products sold. This fall was brought about by declining sales of homogenized milk along with increased sales of concentrated milk, recombined milks, and skim milk. Chocolate drink (milk) and buttermilk were the only products other than homogenized milk which lost sales.

The composition of canned liquid and dry milks also changed. A trend toward greater sales of products with less butterfat was apparent. Sales of nonfat dry milk and dry buttermilk rose, and sales of evaporated milk, whole milk, and dry whole milk fell. However, sales of chocolate milk and condensed milk rose slightly.

A greater variety of cream and related products was available to consumers in 1963. Commercial cream, sour cream, and yogurt had not yet entered these markets in 1957. Although half-and-half sales decreased, overall sales of cream and related products increased.



Table 17.--Estimated sales to civilians of specified dairy products, 4 Alaskan markets, April 1963 and July 1957

Product	Anchorage		Fairbanks		Juneau		Kodiak		Total	
	April	July	April	July	April	July	April	July	April	July
	1963	1957	1963	1957	1963	1957	1963	1957	1963	1957
<u>Bottled milk products 1/</u>										
Homogenized milk.....	283,721	368,161	87,357	85,028	88,895	79,476	3,572	5,305	463,545	537,970
Recombined milk.....	82,949	---	5,224	---	---	---	---	---	88,173	---
Recombined concentrated milk :										
(3-to-1).....	9,605	---	1,036	---	---	---	---	---	10,641	---
Concentrated milk (3-to-1)...	59,056	---	54,242	24,455	---	180	150	---	113,448	24,635
Skim milk.....	10,587	---	732	943	427	159	---	---	11,746	1,102
Buttermilk.....	11,259	13,257	2,408	5,359	1,503	1,942	512	1,036	15,682	21,594
Chocolate drink or milk.....	3,340	5,631	631	6,723	188	121	---	94	4,159	12,569
Total.....	460,517	387,049	151,630	122,508	91,013	81,878	4,234	6,435	707,394	597,870
<u>Canned liquid &amp; dry milk</u>										
Evaporated milk 2/.....	146,744	226,672	59,542	32,864	17,207	42,412	8,187	9,750	231,680	311,698
Condensed milk 2/.....	371	---	354	---	80	---	---	---	805	---
Whole milk.....	851	17,800	1,396	480	328	615	4,010	44	6,585	18,939
Chocolate drink or milk.....	165	---	---	---	101	---	---	---	266	---
Nonfat dry milk 3/.....	270,721	64,700	53,920	34,240	32,255	28,700	6,906	3,050	363,802	130,690
Dry whole milk 2/.....	5,038	7,400	1,945	3,440	265	---	540	1,200	7,788	12,040
Dry buttermilk 3/.....	3,662	---	200	---	379	---	60	---	4,301	---
Dry chocolate milk 3/.....	---	---	---	---	---	---	---	---	---	---
Total.....	427,552	316,572	117,357	71,024	50,615	71,727	19,703	14,044	615,227	473,367
<u>Cream &amp; related products 4/</u>										
Whipping cream.....	2,652	---	578	248	646	25	93	---	3,969	273
Commercial cream.....	206	---	48	---	266	---	39	---	559	---
Half-&-half.....	3,647	6,293	718	85	340	85	---	53	4,705	6,526
Sour cream.....	2,092	---	524	---	270	---	153	---	3,039	---
Yogurt.....	372	---	280	---	116	---	---	---	768	---
<u>Cottage cheese</u>										
All kinds (dry, creamed, chive, etc.).....	12,724	17,458	5,260	6,042	3,374	495	270	630	21,628	24,625

1/ Concentrated milks reconstituted to whole milk, otherwise actual product pounds.

2/ Whole milk equivalent.

3/ Fluid product equivalent.

4/ Actual product.

Sales of cottage cheese have fallen about 12 percent since 1957.

Among market totals. --Sales of bottled milk products rose in each market except Kodiak. The most significant changes were the (1) decline in homogenized milk sales in Anchorage and Kodiak, and (2) the increase in sales of concentrated and recombined milks in the Anchorage and Fairbanks markets. In 1957, concentrated milk and the recombined milks were not on the Anchorage market nor were recombined milks on the Fairbanks market. In April 1963, these products were 33 percent of total bottled milk sales in Anchorage and 40 percent in Fairbanks--compared with only 20 percent for Fairbanks in 1957. The decline in bottled milk sales in Kodiak was likely due to increased substitution of canned whole milk and nonfat dry milk for homogenized milk and butter-milk.

Sales of canned liquid and dry milks rose in each market except Juneau. Evaporated milk sales declined in all markets except Fairbanks. Sales of nonfat dry milk rose in all 4 markets. Significant changes also occurred among markets in the sales of the other products, particularly for canned whole milk.

Cottage cheese sales declined in all markets except Juneau. The declines in sales in the Anchorage and Fairbanks markets probably resulted from the reduction in sales of local cottage cheese rather than outside cottage cheese.

Per capita totals. --For the four markets combined, per capita sales of both bottled milk products and canned liquid and dry milks increased about 6.1 percent. Per capita sales of bottled milk products rose only 1.7 percent, however, sales of canned liquid and dry milks rose 11.7 percent (table 18).

Table 18.--Estimated daily per capita sales to civilians of bottled milk products and canned liquid and dry milk, 4 Alaskan markets, April 1963 and July 1957

Market	Bottled milk products		Canned liquid and dry milks		Total	
	1963	1957	1963	1957	1963	1957
	<u>Quart</u>	<u>Quart</u>	<u>Quart</u>	<u>Quart</u>	<u>Quart</u>	<u>Quart</u>
Anchorage.....	0.2308	0.2497	0.2143	0.2042	0.4451	0.4539
Fairbanks.....	.1982	.1463	.1534	.0849	.3516	.2312
Juneau.....	.2528	.2641	.1406	.2314	.3934	.4955
Kodiak.....	.0470	.1038	.2189	.2265	.2659	.3303
Total.....	.2204	.2167	.1917	.1716	.4120	.3883

Among markets, Fairbanks had the biggest increase in per capita sales of bottled milk products and Kodiak the biggest decline. Fairbanks also showed the biggest increase in per capita sales of canned liquid and dry milks and Juneau the biggest decline.

## Costs and Margins

Homogenized milk. --Grocers paid higher prices for locally produced milk in all markets in 1963 than in 1957 (table 19). The biggest increase in prices paid were in Anchorage and Fairbanks. Prices paid by grocers in Anchorage rose 13.0 percent for half gallons and 14.3 percent for quarts and in Fairbanks, 6.3 percent for half gallons and 5.0 percent for quarts.

Grocers in Anchorage and Fairbanks passed practically all these increases on to consumers as higher selling prices. Although prices paid by Juneau grocers rose slightly, consumer prices declined 2.5 percent per half gallon and 4.6 percent per quart. These grocers absorbed the increase in costs by lowering markups.

Prices paid per half gallon of outside milk increased 2.9 percent for Fairbanks, declined 4.9 percent for Juneau, and stayed about the same for Kodiak. Seattle buying prices per half gallon declined slightly for Juneau and Kodiak and increased 30.6 percent for Fairbanks. However, much of the price increase in Fairbanks was offset by a 17.3 percent decline in transportation costs.

Canned whole milk. --Prices paid by grocers for canned whole milk declined in all four markets (table 20). They were largest for Juneau and Kodiak. In all four markets, the declines can be attributed, in part, to (1) a weakening in canned milk prices in the Seattle market and (2) lower transportation costs.

Consumer prices were higher in Anchorage and Fairbanks than in Juneau and Kodiak. Although prices paid by grocers declined 6.4 percent in Anchorage and almost 8.0 percent in Fairbanks, consumer prices in these cities were 6.7 and 16.3 percent higher, respectively.

Evaporated milk. --Costs and margins for evaporated milk changed only slightly for the four markets. However, markups by retailers and wholesalers increased in all markets (table 20).

Nonfat dry milk. --Grocers in three of the markets paid lower prices for nonfat dry milk (table 20). Prices paid declined 9.5 percent in Anchorage, 8.3 percent in Fairbanks, and 2.5 percent in Kodiak. These reductions resulted from lower Seattle buying prices. Prices paid by grocers in the Juneau market increased 23.7 percent.

Consumer prices declined in all markets--even for Juneau, whose grocers paid higher prices. Consumer prices were lower by 13.3 percent in Anchorage, 13.1 percent in Juneau, 11.7 percent in Fairbanks, and 7.3 percent in Kodiak. Grocers were able to lower selling prices not only because of lower costs but because they took lower markups.

## Department of Defense

The big change since 1957 in milk procurement by the Department of Defense was the switch to feeding military personnel locally processed milk rather than recombined milk. The amount of milk supplied the military for troop use and for sale through commissaries now constitutes the biggest single outlet for local milk by processors in the Anchorage area.

Overall purchases of bottled milk products by the military increased 3.7 percent, although the number of military personnel declined about 25 percent (table 21). The decline in amounts consumed by military personnel was more than offset by increased sales, mostly concentrated milk, to dependents through commissaries.

Table 19.--Local and outside homogenized milk: Costs and margins per half-gallon and quart,  
4 Alaskan markets, April 1963 and July 1957

Source, container size, and market level	Anchorage			Fairbanks			Juneau			Kodiak		
	April 1963	July 1957	Cents	April 1963	July 1957	Cents	April 1963	July 1957	Cents	April 1963	July 1957	Cents
<u>Locally produced milk</u>												
Per half-gallon:												
Price to consumers.....	87.9	79.0		98.1	92.0		66.3	68.0		---	---	
Retail price spread.....	9.9	10.0		14.1	13.0		3.3	7.0		---	---	
Price to grocers.....	78.0	69.0		84.0	79.0		63.0	61.0		---	---	
Transportation and handling charge:	---	---		---	---		---	---		---	---	
Buying price.....	78.0	69.0		84.0	79.0		63.0	61.0		---	---	
Per quart:												
Price to consumers.....	45.0	40.0		49.1	47.0		33.4	35.0		---	50.0	
Retail price spread.....	5.0	5.0		7.1	7.0		1.4	3.5		---	6.0	
Price to grocers.....	40.0	35.0		42.0	40.0		32.0	31.5		---	44.0	
Transportation and handling charge:	---	---		---	---		---	---		---	---	
Buying price.....	40.0	35.0		42.0	40.0		32.0	31.5		---	44.0	
<u>Outside milk 1/</u>												
Per half-gallon:												
Price to consumers.....	88.0	---		100.0	93.0		65.4	68.0		84.4	77.0	
Retail price spread.....	2.8	---		14.6	10.0		7.3	7.0		14.1	7.0	
Price to grocers.....	85.2	---		85.4	83.0		58.1	61.1		70.3	70.0	
Transportation and handling charge:	39.7	---		39.7	48.0		11.8	14.0		22.4	21.0	
Buying price.....	45.5	---		45.7	35.0		46.3	47.0		47.9	49.0	
Per quart:												
Price to consumers.....	45.0	---		49.7	49.0		33.3	35.0		43.0	39.0	
Retail price spread.....	1.8	---		6.5	5.0		3.9	3.5		6.6	4.0	
Price to grocers.....	43.2	---		43.2	44.0		29.4	31.5		36.4	35.0	
Transportation and handling charge:	20.2	---		20.2	24.0		6.0	7.0		11.4	10.5	
Buying price.....	23.0	---		23.0	20.0		23.4	24.5		25.0	24.5	

1/ Seattle, Wash., area.

Table 20.--Costs and margins for canned whole milk, evaporated milk, and nonfat dry milk,  
4 Alaskan markets, April 1963 and July 1957

Product, container size, and market level	Anchorage		Fairbanks		Juneau		Kodiak	
	April 1963	July 1957	April 1963	July 1957	April 1963	July 1957	April 1963	July 1957
<u>Canned whole milk per quart</u>								
Price to consumer.....	52.3	49.0	57.0	49.0	41.9	49.0	43.2	46.0
Retail price spread.....	13.0	7.0	16.5	5.0	11.3	8.2	9.6	6.0
Price to retail grocer.....	39.3	42.0	40.5	44.0	30.6	40.8	33.6	40.0
Transportation and handling charge..	.5	---	.5	---	---	---	---	---
Wholesale selling price.....	38.8	42.0	40.0	---	---	---	---	---
Wholesale price spread.....	4.4	4.0	5.6	---	---	---	---	---
Price to wholesaler.....	34.4	38.0	34.4	---	---	---	---	---
Transportation and handling charge..	4.0	1.9	4.0	8.0	3.1	4.1	5.4	4.8
Buying price.....	30.4	36.1	30.4	36.0	27.5	36.7	28.2	35.2
<u>Nonfat dry milk per quart 1/</u>								
Price to consumers.....	9.8	11.3	10.6	12.0	8.6	9.9	10.2	11.0
Retail price spread.....	2.2	2.9	2.9	3.6	1.3	4.0	2.4	3.0
Price to retail grocer.....	7.6	8.4	7.7	8.4	7.3	5.9	7.8	8.0
Transportation and handling charge..	2/	---	2/	---	---	---	---	---
Wholesale selling price.....	7.6	8.4	7.7	8.4	---	---	---	---
Wholesale price spread.....	.4	---	.5	---	---	---	---	---
Price to wholesaler.....	7.2	8.4	7.2	8.4	---	---	---	---
Transportation and handling charge..	.5	.5	.5	.4	.4	.3	.6	.5
Buying price.....	6.7	7.9	6.7	8.0	6.9	5.6	7.2	7.5
<u>Evaporated milk per 14.5 oz. can</u>								
Price to consumers.....	18.8	19.0	21.9	19.0	17.8	18.0	21.4	19.0
Retail price spread.....	2.9	2.6	5.4	2.0	2.3	2.2	4.5	3.5
Price to retail grocer.....	15.9	16.4	16.5	17.0	15.5	15.8	16.9	15.5
Transportation and handling charge..	1/	---	.1	---	---	---	---	---
Wholesale selling price.....	15.9	16.4	16.4	---	---	---	---	---
Wholesale price spread.....	.3	.5	.2	---	---	---	---	---
Price to wholesaler.....	15.6	15.9	16.2	---	---	---	---	---
Transportation and handling charge..	2.2	1.9	2.2	4.0	1.7	1.7	2.9	2.4
Buying price.....	13.4	14.0	14.0	13.0	13.8	14.1	14.0	13.1

1/ Fluid equivalent.

2/ Less than 0.05 cent.



Table 21.--Estimated consumption of specified dairy products by the Department of Defense in Alaska, April 1963 and July 1957

Product	April 1963	July 1957
	<u>Quarts</u>	<u>Quarts</u>
<u>Bottled milk products</u>		
Homogenized milk.....	427,324	100,414
Recombined milk.....	786	710,446
Concentrated milk (3-to-1) <u>1/</u> .....	536,650	117,463
Skim milk.....	1,168	---
Buttermilk.....	3,412	3,936
Chocolate drink (or milk).....	924	3,320
Total.....	970,264	935,579
<u>Canned liquid and dry milks</u>		
Evaporated milk <u>1/</u> .....	43,021	111,267
Whole milk.....	16,351	8,144
Condensed milk <u>1/</u> .....	1,698	---
Chocolate milk.....	46	---
Nonfat dry milk <u>2/</u> .....	25,015	6,780
Dry whole milk <u>1/</u> .....	64	12,120
Total.....	86,195	138,311
<u>Cream and related products</u> <u>3/</u>		
Whipping cream.....	257	66
Half-&-half.....	193	1,175
Commercial cream.....	150	---
Sour cream.....	941	---
<u>Cottage cheese</u> : All kinds (dry, creamed, chive, etc.) <u>3/</u> .....	9,734	11,090

1/ Reconstituted to whole milk.

2/ Reconstituted to fluid product.

3/ Actual product.

Varied changes occurred in the amounts of other dairy products consumed. Purchases of canned liquid and dry milk and cottage cheese declined. Overall purchases of cream and related products rose, although half-and-half purchases fell. The big increase in this group was for sour cream.

## CONCLUDING COMMENTS

Food retailers in most major Alaskan markets obtain supplies of fresh whole milk from the Seattle and Portland areas. The landed cost of obtaining outside milk is one of the chief factors which influence the price received by processors for local milk, also the price which the processor pays local producers. Unless the processor can command a higher price for local milk, producers should not expect to receive substantially more than the landed cost of outside milk.

In all Alaskan markets, substitutes for fresh milk abound. Consumers substitute these products for fresh milk in various proportions in all markets where fresh milk is sold. Probably the three most important factors used by most consumers in deciding whether to use fresh milk or a substitute are: (1) the availability of fresh milk, (2) the selling price of fresh milk, and (3) the difference in price between fresh milk and the available substitutes.

Sales of fresh milk in many of the smaller coastal markets could be increased by more frequent deliveries. Many coastal markets receive milk once a week or once every 2 weeks. Many retail food stores cannot keep an adequate supply between deliveries because of inadequate storage facilities and spoilage.

The comparison with the 1957 data illustrates what happens to fresh milk sales when retail prices for fresh milk and its substitutes change. Except for Juneau, sales of fresh milk either declined (Anchorage and Kodiak) or increased slightly (Fairbanks). Both the declines and the slight increase in these markets can be attributed largely to higher fresh milk prices, larger consumer price differences between fresh milk and its substitutes, and the introduction of new, lower priced substitutes (particularly in Anchorage and Fairbanks). Sales of fresh milk rose almost 12 percent in Juneau despite smaller differences in the fresh milk price and the prices for its substitutes. The increase in sales can be attributed, at least in part, to lower consumer prices for fresh milk.

This study throws light on some of the problems facing both consumers of dairy products and milk producers. More information is needed before the future course of the Alaskan dairy industry can be determined. Before any recommendations can be made, a study needs to be done which might include: (1) seasonality of milk production; (2) seasonality of consumption; (3) factors affecting prices in States from which milk and dairy products are imported; (4) the method by which prices for local milk are negotiated; (5) the standards under which milk is produced and marketed; and (6) factors affecting the high cost of milk production in Alaska and the opportunities to reduce such costs.



